

2014

SERVICE MANUAL

***SRAM*XX1**

SRAM LLC WARRANTY

EXTENT OF LIMITED WARRANTY

Except as otherwise set forth herein, SRAM warrants its products to be free from defects in materials or workmanship for a period of two years after original purchase. This warranty only applies to the original owner and is not transferable. Claims under this warranty must be made through the retailer where the bicycle or the SRAM component was purchased. Original proof of purchase is required. **Except as described herein, SRAM makes no other warranties, guaranties, or representations of any type (express or implied), and all warranties (including any implied warranties of reasonable care, merchantability, or fitness for a particular purpose) are hereby disclaimed.**

LOCAL LAW

This warranty statement gives the customer specific legal rights. The customer may also have other rights which vary from state to state (USA), from province to province (Canada), and from country to country elsewhere in the world.

To the extent that this warranty statement is inconsistent with the local law, this warranty shall be deemed modified to be consistent with such law, under such local law, certain disclaimers and limitations of this warranty statement may apply to the customer. For example, some states in the United States of America, as well as some governments outside of the United States (including provinces in Canada) may:

- a. Preclude the disclaimers and limitations of this warranty statement from limiting the statutory rights of the consumer (e.g. United Kingdom).
- b. Otherwise restrict the ability of a manufacturer to enforce such disclaimers or limitations.

For Australian customers:

This SRAM limited warranty is provided in Australia by SRAM LLC, 133 North Kingsbury, 4th floor, Chicago, Illinois, 60642, USA. To make a warranty claim please contact the retailer from whom you purchased this SRAM product. Alternatively, you may make a claim by contacting SRAM Australia, 6 Marco Court, Rowville 3178, Australia. For valid claims SRAM will, at its option, either repair or replace your SRAM product. Any expenses incurred in making the warranty claim are your responsibility. The benefits given by this warranty are additional to other rights and remedies that you may have under laws relating to our products. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

LIMITATIONS OF LIABILITY

To the extent allowed by local law, except for the obligations specifically set forth in this warranty statement, in no event shall SRAM or its third party suppliers be liable for direct, indirect, special, incidental, or consequential damages.

LIMITATIONS OF WARRANTY

This warranty does not apply to products that have been incorrectly installed and/or adjusted according to the respective SRAM user manual. The SRAM user manuals can be found online at sram.com, rockshox.com, avidbike.com, truvativ.com, or zipp.com.

This warranty does not apply to damage to the product caused by a crash, impact, abuse of the product, non-compliance with manufacturers specifications of usage or any other circumstances in which the product has been subjected to forces or loads beyond its design.

This warranty does not apply when the product has been modified, including, but not limited to any attempt to open or repair any electronic and electronic related components, including the motor, controller, battery packs, wiring harnesses, switches, and chargers.

This warranty does not apply when the serial number or production code has been deliberately altered, defaced or removed.

This warranty does not apply to normal wear and tear. Wear and tear parts are subject to damage as a result of normal use, failure to service according to SRAM recommendations and/or riding or installation in conditions or applications other than recommended.

Wear and tear parts are identified as:

- | | | | |
|--|---|-------------------------|---------------------|
| •Dust seals | •Stripped threads/bolts (aluminium, titanium, magnesium or steel) | •Handlebar grips | •Transmission gears |
| •Bushings | •Brake sleeves | •Shifter grips | •Spokes |
| •Air sealing o-rings | •Brake pads | •Jockey wheels | •Free hubs |
| •Glide rings | •Chains | •Disc brake rotors | •Aero bar pads |
| •Rubber moving parts | •Sprockets | •Wheel braking surfaces | •Corrosion |
| •Foam rings | •Cassettes | •Bottomout pads | •Tools |
| •Rear shock mounting hardware and main seals | •Shifter and brake cables (inner and outer) | •Bearings | •Motors |
| •Upper tubes (stanchions) | | •Bearing races | •Batteries |
| | | •Pawls | |

Notwithstanding anything else set forth herein, this warranty is limited to one year for all electronic and electronic related components including motors, controllers, battery packs, wiring harnesses, switches, and chargers. The battery pack and charger warranty does not include damage from power surges, use of improper charger, improper maintenance, or such other misuse.

This warranty shall not cover damages caused by the use of parts of different manufacturers.

This warranty shall not cover damages caused by the use of parts that are not compatible, suitable and/or authorised by SRAM for use with SRAM components.

This warranty shall not cover damages resulting from commercial (rental) use.

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SAFETY FIRST!

We care about YOU. Please, always wear your safety glasses and protective gloves when servicing SRAM products.
Protect yourself! Wear your safety gear!

XX1 Service

We recommend that you have your XX1 components serviced by a qualified bicycle mechanic. Servicing XX1 components requires knowledge of drivetrain components as well as the special tools used for service.

For exploded diagram and part number information, please refer to the [Spare Parts Catalog](#) available on our web site at www.sram.com/service.

For order information, please contact your local SRAM distributor or dealer.

Information contained in this publication is subject to change at any time without prior notice. For the latest technical information, please visit our website at sram.com/service.

Your product's appearance may differ from the pictures/diagrams contained in this publication.

GXP Crankset and Bottom Bracket Service

NOTICE

To ensure that your GXP crankset and bottom bracket perform properly, we highly recommend that you have them serviced and installed by a qualified bicycle mechanic. Installation of the bottom bracket does not have to be permanent. However, removal can damage the bottom bracket. Do not reuse the bottom bracket after removal from the frame shell. The bottom bracket will only work in undamaged frames in good condition and must NOT be used as a way to repair frames with damaged press fit bottom bracket shells. Improper use, installation or removal of the crankset and/or bottom bracket will void your warranty and can void the warranty for your frame.

Maintenance

Use only water and a mild soap to clean the crankset and bottom bracket. Do **not** use a pressure washer.

If creaking of the assembly occurs, check that all parts are torqued to specification, and grease is liberally applied on all surfaces noted. Verify that chainring bolts are torqued to 8–9 N·m (71–80 in·lb). If creaking continues, consult your local SRAM dealer for assistance.

Bearings require regular maintenance. Regrease bearings after 100 hours of use in dry conditions or immediately following any significant exposure to water; such as riding in heavy rain or through water crossings.

Parts and Tools

- | | |
|---|------------------------|
| • Safety glasses | • Pick |
| • Nitrile gloves | • 8 mm hex wrench |
| • Clean, lint-free rag | • Socket wrench |
| • Isopropyl alcohol | • Torque wrench |
| • CeramicSpeed® grease or other high quality bicycle grease | • 8 mm hex bit socket |
| • GXP tool | • Rubber mallet |
| • Calipers | • Flathead screwdriver |

GXP Crankset Removal

- 1** Insert an 8 mm hex wrench into the non-drive side crank arm bolt and turn it counter-clockwise to remove the crank arm.



- 2** Use a rubber mallet to tap the spindle of the drive side crank arm and remove it from the bottom bracket.
- The bearing shields may come off with the crank arms.*



GXP Bottom Bracket Service

Bottom bracket service should be done with the bottom bracket installed in the frame. Only remove the bottom bracket if it is damaged and needs to be replaced.

- 1 Use a flathead screwdriver to remove the bearing shields.
The "flower shaped" non-drive side bearing shield may have come off with the crank arm.

NOTICE

To prevent damage to the inner seal, make sure to position the screwdriver at the semi-circular cutout on the inner surface of the drive side bearing shield.



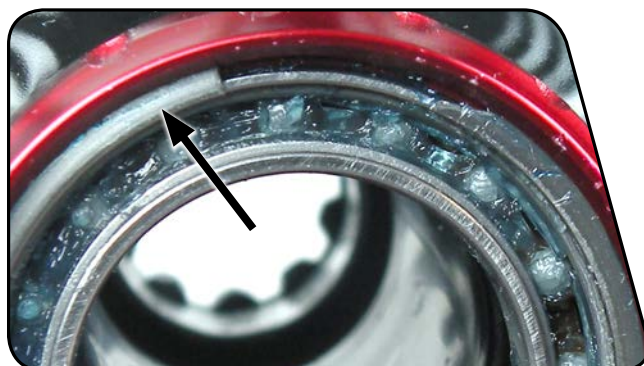
- 2 Use a pick to remove the inner seal. Spray isopropyl alcohol on the inner seal and clean it with a rag.

NOTICE

Do not crease or damage the metal backing of the inner seal.



- 3 Do not remove the retaining clip.

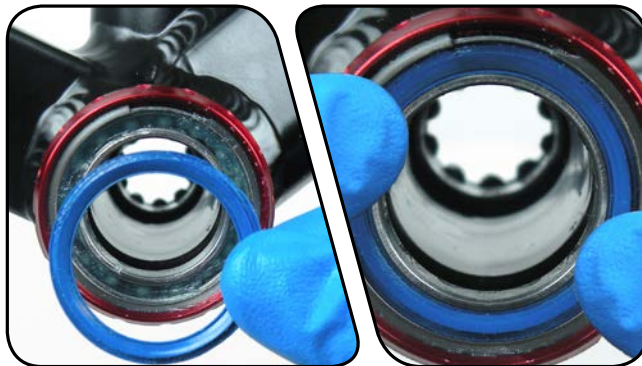


- 4** Use a clean rag to remove the old grease, dirt, or debris from the bearings. Apply a liberal layer of grease to the bearings. Use CeramicSpeed® grease for ceramic bearings and high quality grease for non-ceramic bearings.

Inspect the ball bearings. If there is metallic debris or rust present, the bottom bracket must be replaced.



- 5** Reinstall the inner seal, with the steel backing facing toward the bearings, by pressing it in with your fingers. Gently press the inside of the seal below the inner race.



- 6** Reinstall the bearing shields into the bottom bracket. **The bearing shield and inner race should rotate freely inside the cup.**



GXP Bottom Bracket Removal

Only remove the bottom bracket if it is damaged and needs to be replaced. Bottom bracket service should be done with the bottom bracket installed in the frame.

- 1 Use the GXP tool with a socket wrench to turn the drive side bottom bracket cup **clockwise** and remove it from the frame. Use the GXP tool with a socket wrench to turn the non-drive side bottom bracket cup **counter-clockwise** and remove it from the frame.



GXP Bottom Bracket Installation

- 1** Apply grease to the bottom bracket and frame surfaces as shown.



- 2** Use calipers to measure the bottom bracket shell width of your frame.
68 mm bottom bracket shells require one 2.5 mm spacer on each side of the bottom bracket shell.
73 mm bottom bracket shells do not require spacers.



- 3** **68 mm bottom bracket shell:** install one 2.5 mm spacer on each bottom bracket cup.

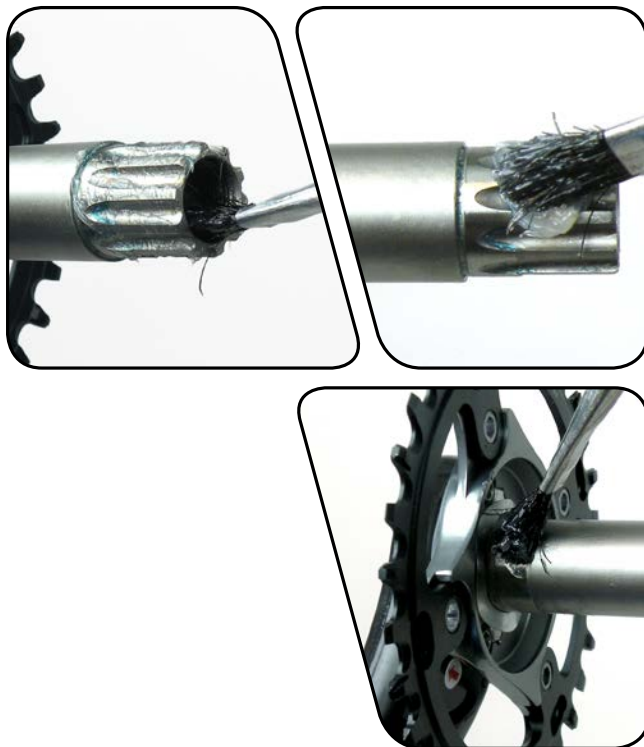
68 and 73 mm bottom bracket shell: thread the drive side bottom bracket cup counter-clockwise into the frame until the flange (or spacer) contacts the bottom bracket shell face. Use a GXP tool with a torque wrench to tighten to 34-41 N·m (301-363 in-lb).

Thread the non-drive side bottom bracket cup clockwise into the frame until the flange (or spacer) contacts the bottom bracket shell face. Use a GXP tool with a torque wrench to tighten to 34-41 N·m (301-363 in-lb).



GXP Crankset Installation

- 1** Apply grease to the spindle threads, splines, and races (the smooth part of the spindle near the chainring) of the crank spindle.



- 2** Slide the drive side crank spindle through the drive side bottom bracket cup until the splines come through the non-drive side bottom bracket cup, and the spindle stops.

Make sure the non-drive side "flower shaped" bearing shield is still installed properly.



3 Install the non-drive side crank arm onto the crank spindle and use a torque wrench with an 8 mm hex bit socket to tighten to 48-54 N·m (425-478 in-lb).

Check the assembly for play by rocking the crank arms back and forth away from the frame. If the crank moves, tighten the crank arm bolt until no play is detected. If maximum torque of 54 N·m (478 in-lb) has been achieved, remove the non-drive side crank arm from the spindle, apply additional grease and repeat installation procedures until play is eliminated.



PressFit30 Crankset and Bottom Bracket Service

NOTICE

To ensure that your PressFit30 crankset and bottom bracket perform properly, we highly recommend that you have them serviced and installed by a qualified bicycle mechanic. Installation of the bottom bracket does not have to be permanent. However, removal can damage the bottom bracket. Do not reuse the bottom bracket after removal from the frame shell. The bottom bracket will only work in undamaged frames in good condition and must NOT be used as a way to repair frames with damaged press fit bottom bracket shells. Improper use, installation or removal of the crankset and/or bottom bracket will void your warranty and can void the warranty for your frame.

Maintenance

Use only water and a mild soap to clean the crankset and bottom bracket. Do **not** use a pressure washer.

If creaking of the assembly occurs, check that all parts are torqued to specification, and grease is liberally applied on all surfaces noted. Verify that chainring bolts are torqued to 8-9 N·m (71-80 in·lb). If creaking continues, consult your local SRAM dealer for assistance.

Bearings require regular maintenance. Regrease bearings after 100 hours of use in dry conditions or immediately following any significant exposure to water; such as riding in heavy rain or through water crossings.

Parts and Tools

- Safety glasses
- Nitrile gloves
- Clean, lint-free rag
- Isopropyl alcohol
- CeramicSpeed® grease or other high quality bicycle grease
- Calipers
- Pick
- Wooden or plastic dowel
- BB30 removal tool
- Headset press (Park Tool Co.© HHP-2 or equivalent)
- 2 mm and 10 mm hex wrenches
- Torque wrench
- 10 mm hex bit socket
- Rubber mallet
- Small flathead screwdriver

PressFit30 Crankset Removal

- 1 Insert a 10 mm hex wrench into the drive side crank arm bolt and turn it counter-clockwise to remove the crank arm.

The bearing shield may come off with the crank arm.



- 2 Use a rubber mallet to tap the spindle of the non-drive side crank arm to remove it from the bottom bracket.



PressFit30 Bottom Bracket Service

- 1 Remove the bearing shields from the drive side and non-drive side of the bottom bracket.

The bearing shields may have already come off with the crank arms.



- 2 Use a small flathead screwdriver to remove the gutter seal.

NOTICE

Do not to bend or crease the metal backing of the gutter seal.



- 3 Use a small flathead screwdriver to remove the inner seal.

NOTICE

Do not to bend or crease the metal backing of the inner seal.



- 4 Use a clean rag to remove the old grease, dirt, or debris from the bearings. Apply a liberal layer of grease to the bearings. Use CeramicSpeed® grease for ceramic bearings and high quality bicycle grease for non-ceramic bearings.

Inspect the ball bearings. If there is metallic debris or rust present, the bottom bracket must be replaced.



- 5** Install the inner seal and press it until it is seated in the bearing and makes contact with the inner race. Use a clean rag to remove any excess grease.



- 6** Install the gutter seal and press it until it is seated and the outer edge is below the rim of the plastic cup.



- 7** Apply a small amount of grease onto the gutter seal.



PressFit30 Bottom Bracket Removal

Only remove the bottom bracket if it is damaged and needs to be replaced. Bottom bracket service should be done with the bottom bracket installed in the frame.

- 1** Remove the bearing shields from the drive side and non-drive side of the frame.

The bearing shields may have already come off with the crank arms.



- 2** Install the BB30 removal tool against the bearing. Insert a wooden or plastic dowel through the bottom bracket shell and place the end of the dowel against the back of the BB30 removal tool. Tap the BB30 removal tool with a mallet to remove the bearing from the frame. Repeat for the other side.

Place a rag over the bearing you are removing to prevent it from getting lost.

Do not reinstall removed bearings. Always replace the bearings with a new set.



PressFit30 Bottom Bracket Installation

- 1** Remove the bearing shields from the bottom bracket cups.



- 2** Apply grease to the bottom bracket and frame surfaces as shown, including the outside face of the bearings and the drive side bottom bracket cup o-ring.



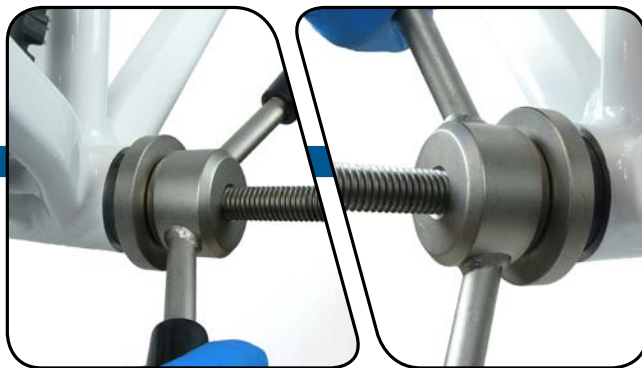
- 3** Use calipers to measure the width of the bottom bracket shell.
- 68 mm bottom bracket shells** will require one 2.5 mm spacer on each side of the bottom bracket, between the crank arm and the bottom bracket bearing shield. You will add these spacers in later steps.
- 73 mm bottom bracket shells** do not require spacers.



- 4** Use a headset press to press the drive side bottom bracket cup into the bottom bracket shell until the bottom bracket cup flange is seated against the bottom bracket shell. Repeat for the non-drive side bottom bracket cup. Consult the headset press manufacturer's instructions for proper use of the headset press.

NOTICE

Do not install both bottom bracket cups simultaneously, this can damage the bottom bracket and frame.



PressFit30 Crankset Installation

- 1** Apply grease to the spindle threads, splines, and races (the smooth parts of the spindle near the Integrated Preload Adjuster and the splines).



- 2** Turn the Integrated Preload Adjuster (located on the spindle of the non-drive side crank arm) in the direction of the arrow until it contacts the crank arm. You may need to first loosen the 2 mm adjuster bolt located on the preload adjuster.



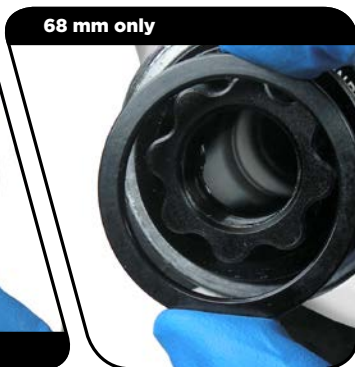
3 Install the bearing shield onto the non-drive side of the bottom bracket. Slide the non-drive side crank arm spindle through the non-drive side bottom bracket cup until the splines come through the drive side bottom bracket cup, and the spindle stops. You may need to tap the crank arm with a rubber mallet to fully install the spindle into the bottom bracket.

For 68 mm bottom bracket shell: install the 2.5 mm spacer onto the crank spindle before installing the crank into the bottom bracket.



4 For 68 mm bottom bracket shells: install the drive side bearing shield, the large spacer, and then the 2.5 mm spacer onto the crank spindle.

For 73 mm bottom bracket shells: install the drive side bearing shield and the large spacer onto the crank spindle.



- 5** Place the drive side crank arm on the spindle and use a 10 mm hex wrench to install it. Use a torque wrench with a 10 mm hex bit socket to tighten the crank bolt to 48-54 N·m (425-478 in-lb). Then tap the crank with a rubber mallet to seat the crank against the drive side bearing.



- 6** Turn the Integrated Preload Adjuster in the direction of the arrow until it is hand tight. Use a 2 mm hex wrench to turn the preload adjuster bolt to close the gap in the adjuster.

Check the assembly for play by rocking the crank arms back and forth away from the frame. If the crank moves, tighten the crank arm bolt until no play is detected. If maximum torque of 54 N·m (478 in-lb) has been achieved, remove the drive side crank arm from the spindle, apply additional grease and repeat installation procedures until play is eliminated.



NOTICE

To ensure that your PressFit GXP crankset and bottom bracket perform properly, we highly recommend that you have them serviced and installed by a qualified bicycle mechanic. Installation of the bottom bracket does not have to be permanent. However, removal can damage the bottom bracket. Do not reuse the bottom bracket after removal from the frame shell. The bottom bracket will only work in undamaged frames in good condition and must NOT be used as a way to repair frames with damaged press fit bottom bracket shells. Improper use, installation or removal of the crankset and/or bottom bracket will void your warranty and can void the warranty for your frame.

Maintenance

Use only water and a mild soap to clean the crankset and bottom bracket. Do **not** use a pressure washer.

If creaking of the assembly occurs, check that all parts are torqued to specification, and grease is liberally applied on all surfaces noted. Verify that chainring bolts are torqued to 8–9 N·m (71–80 in·lb). If creaking continues, consult your local SRAM dealer for assistance.

Bearings require regular maintenance. Regrease bearings after 100 hours of use in dry conditions or immediately following any significant exposure to water; such as riding in heavy rain or through water crossings.

Parts and Tools

- Safety glasses
- Nitrile gloves
- Clean, lint-free rag
- Isopropyl alcohol
- High quality bicycle grease
- Calipers
- Pick
- Headset press (Park Tool Co.© HHP-2 or equivalent)
- 8 mm hex wrench
- Torque wrench
- 8 mm hex bit socket
- Rubber mallet
- Small flathead screwdriver
- Wooden or plastic dowel

PressFit GXP Crankset Removal

- 1** Insert an 8 mm hex wrench into the non-drive side crank arm bolt and turn it counter-clockwise to remove the crank arm.

The bearing shield may come off with the crank arm.



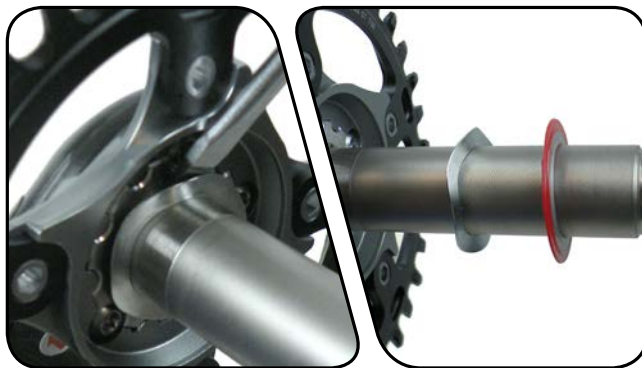
- 2** Remove the bearing shield from the spindle on the non-drive side of the bottom bracket shell.



- 3** Use a rubber mallet to tap the spindle of the non-drive side crank arm to remove it from the bottom bracket.



- 4** Use a flathead screwdriver to remove the wavy washer and bearing shield from the spindle of the drive side crank arm.



PressFit GXP Bottom Bracket Service

Only remove the bottom bracket if it is damaged and needs to be replaced. PressFit GXP bottom bracket cups will be severely damaged during removal and will need to be replaced. Bottom bracket service should be done with the bottom bracket installed in the frame. To service, wipe the outer bottom bracket surfaces with a clean rag.

- 1 Apply grease to the outer seal and inner race.



PressFit GXP Bottom Bracket Removal

Only remove the bottom bracket if it is damaged and needs to be replaced. PressFit GXP bottom bracket cups will be severely damaged during removal and will need to be replaced. Bottom bracket service should be done with the bottom bracket installed in the frame.

- 1 Insert a wooden or plastic dowel through the drive side of the bottom bracket shell and place the end of the dowel against the internal cup wall, not the bearing. Then, firmly tap the dowel with a rubber mallet to remove the non-drive side cup from the frame. Repeat for the drive side cup.

Place a rag over the cup you are removing to prevent it from getting lost.



PressFit GXP Bottom Bracket Installation

- 1 Carefully remove the bearing shields from the bottom bracket cups. You may need to use a pick to free the shields from the bottom bracket cups.

NOTICE

Failure to remove the bearing shields from the bottom bracket cups will result in damage to the bearing shields during bottom bracket installation using the headset press.



- 2 Apply grease to the bottom bracket and frame surfaces as shown, including the inside face of the bearing seals.

It is not necessary to face or machine the bottom bracket shell to use the PressFit GXP system.



- 3 Use calipers to measure the width of the bottom bracket shell.

89.5 mm bottom bracket shells require **one** 2.5 mm spacer **on the drive side** bottom bracket cup, between the bottom bracket shell and the bottom bracket cup.

92 mm bottom bracket shells do not require any spacers.



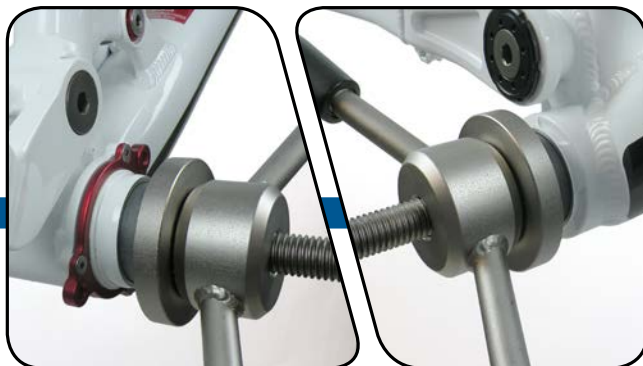
- 4** **89.5 mm bottom bracket shell:** install one 2.5 mm spacer on the drive side bottom bracket cup.



- 5** Verify that the bearing shields are removed from both sides of the bottom bracket cups. Use the headset press to press the drive side bottom bracket cup into bottom bracket shell until the bottom bracket cup flange (or spacer) is fully seated against the bottom bracket shell. Repeat this process for the non-drive side bottom bracket cup. Consult your headset press manufacturer's instructions for proper use of the headset press.

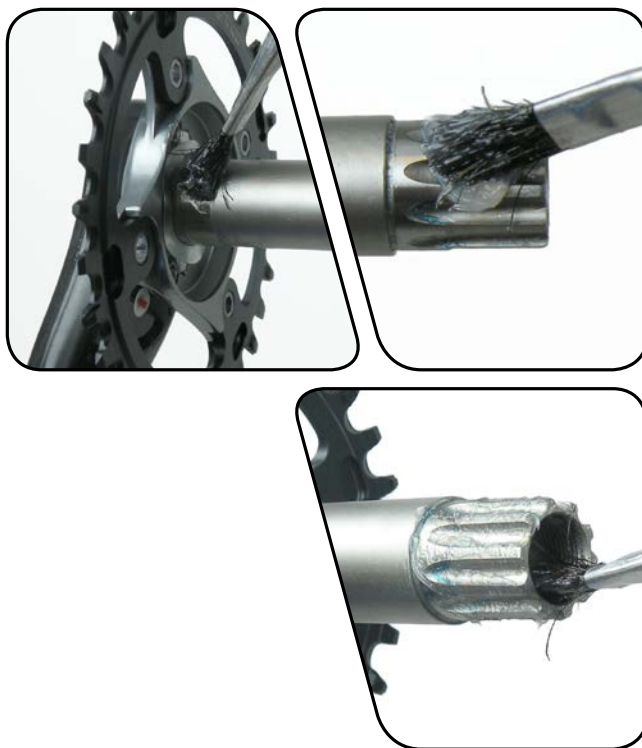
NOTICE

Installing both bearings simultaneously can damage the bearings and/or frame.



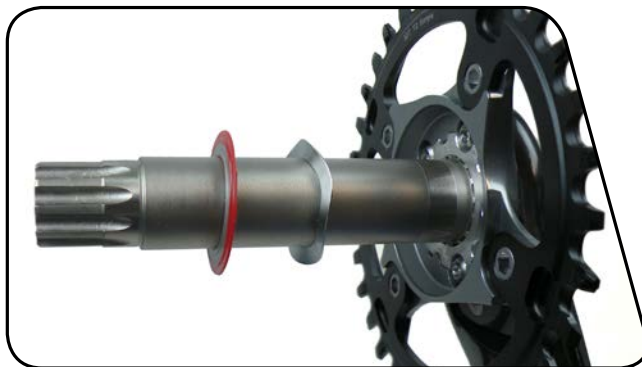
PressFit GXP Crank Installation

- 1** Apply grease to the spindle threads, splines, and races (the smooth part of the spindle near the chainring).



- 2** Install the wave washer onto the spindle. Then, install the drive side bearing shield, GXP logo facing the chainrings, onto the spindle.

**The drive side bearing shield inner diameter has a circular design.
The non-drive side bearing shield inner diameter has a “flower shaped” design.**



- 3** Slide the drive side crank arm spindle through the drive side bottom bracket cup until the splines come through the non-drive side bottom bracket cup, and the spindle stops.



- 4** Install the non-drive side bearing shield onto the spindle, making sure the bearing shield is oriented correctly. The stepped lip on the bearing shield should face the bottom bracket shell.



- 5** Apply grease to the threads of non-drive side crank bolt. Place the non-drive side crank arm on the spindle and use a torque wrench with an 8 mm hex bit socket to tighten the crank bolt to 48-54 N·m (425-478 in-lb).

Check the assembly for play by rocking the crank arms back and forth away from frame. If the crank moves, tighten crank arm bolt until no play is detected. If maximum torque of 54 N·m (478 in-lb) has been achieved, remove the non-drive side crank arm from the spindle, apply additional grease and repeat installation procedures until play is eliminated.



BB30 Crankset and Bottom Bracket Service

NOTICE

To ensure that your PressFit GXP crankset and bottom bracket perform properly, we highly recommend that you have them serviced and installed by a qualified bicycle mechanic. Installation of the bottom bracket does not have to be permanent. However, removal can damage the bottom bracket. Do not reuse the bottom bracket after removal from the frame shell. The bottom bracket will only work in undamaged frames in good condition and must NOT be used as a way to repair frames with damaged press fit bottom bracket shells. Improper use, installation or removal of the crankset and/or bottom bracket will void your warranty and can void the warranty for your frame.

It is not necessary to face or machine the bottom bracket shell to use the BB30 system.

Maintenance

Use only water and a mild soap to clean the crankset and bottom bracket. Do **not** use a pressure washer.

If creaking of the assembly occurs, check that all parts are torqued to specification, and grease is liberally applied on all surfaces noted. Verify that chainring bolts are torqued to 8-9 N·m (71-80 in·lb). If creaking continues, consult your local SRAM dealer for assistance.

Bearings require regular maintenance. Regrease bearings after 100 hours of use in dry conditions or immediately following any significant exposure to water; such as riding in heavy rain or through water crossings.

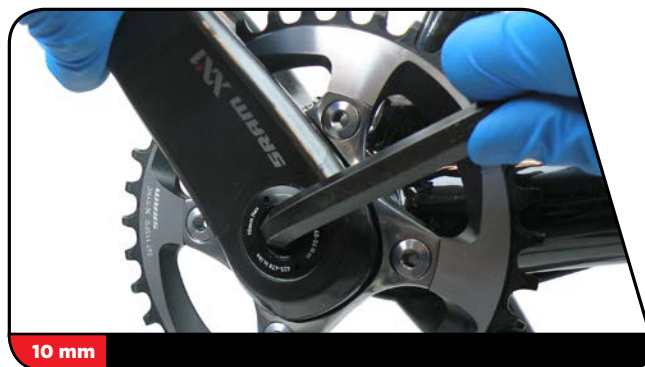
Parts and Tools

- Safety glasses
- Nitrile gloves
- Clean, lint-free rag
- Isopropyl alcohol
- CeramicSpeed® grease or other high quality bicycle grease
- Calipers
- Pick
- Headset press (Park Tool Co.© HHP-2 or equivalent)
- 2 mm and 10 mm hex wrenches
- Torque wrench
- 10 mm hex bit socket
- Rubber mallet
- Small flathead screwdriver
- Wooden or plastic dowel

BB30 Crankset Removal

- 1 Insert a 10 mm hex wrench on the drive side crank arm and turn it counter-clockwise to remove drive side crank arm.

The bearing shields may come off with the crank arm.



- 2 Use a rubber mallet to tap the spindle of the non-drive side crank arm to remove it from the bottom bracket.

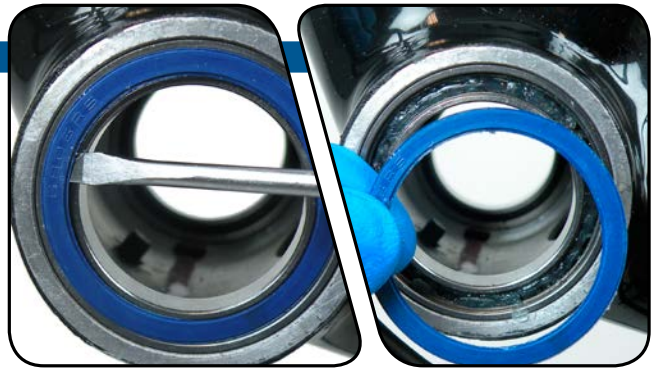


BB30 Bottom Bracket Service

- 1 Use a small flathead screwdriver to remove the gutter seal.

NOTICE

Do not crease or damage the metal backing of the gutter seal.

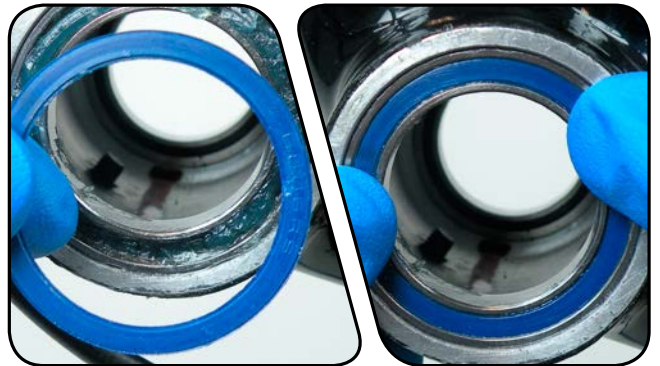


- 2 Use a clean rag to remove the old grease, dirt, or debris from the bearings. Apply a liberal layer of grease to the bearings. Use CeramicSpeed® grease for ceramic bearings and high quality grease for non-ceramic bearings.

Inspect the ball bearings. If there is metallic debris or rust present, the bottom bracket must be replaced.



- 3 Install the gutter seal and press it until it is seated in the bearing and makes contact with the inner race. Use a clean rag to wipe off any excess grease.



- 4 Apply a small amount of grease onto the gutter seal.



BB30 Bottom Bracket Removal

Only remove the bottom bracket if it is damaged and needs to be replaced. Bottom bracket service should be done with the bottom bracket installed in the frame.

- 1 Remove the bearing shields from the drive side and non-drive side of the frame.

The bearing shields may have come off with the crank arms.



- 2 Install the BB30 removal tool against the bearing. Insert a wooden or plastic dowel through the bottom bracket shell and place the end of the dowel against the back of the BB30 removal tool. Tap the BB30 removal tool with a mallet to remove the bearing from the frame. Repeat for the other side.

Place a rag over the bearing you are removing to prevent it from getting lost.

Do not reinstall removed bearings. Always replace the bearings with a new set.



- 3 Removal of the retaining clips is unnecessary for bearing replacement unless the retaining clips are damaged. The damaged retaining clip can be removed by using a flathead screwdriver to lift the notched section of the retaining clip out of the bottom bracket groove and then guiding the clip out of the groove.

⚠ CAUTION - EYE HAZARD

The BB30 retaining clips have sharp edges and can rapidly eject from the bottom bracket. Wear safety glasses.



BB30 Bottom Bracket Installation

- 1 Use calipers to measure the bottom bracket shell width of your frame.

68 mm bottom bracket shells will require one 2.5 mm spacer on each side of the bottom bracket, between the crank and the bottom bracket bearing shield. You will add these spacers in later steps.

73 mm bottom bracket shells do not require spacers.



- 2 Use a small flathead screwdriver to install the square end of the retaining clip into the bottom bracket groove, then work the retaining clip into the groove until it is seated. Repeat for the opposite side.

⚠ CAUTION - EYE HAZARD

The BB30 retaining clips have sharp edges and can rapidly eject from the bottom bracket. Wear safety glasses.



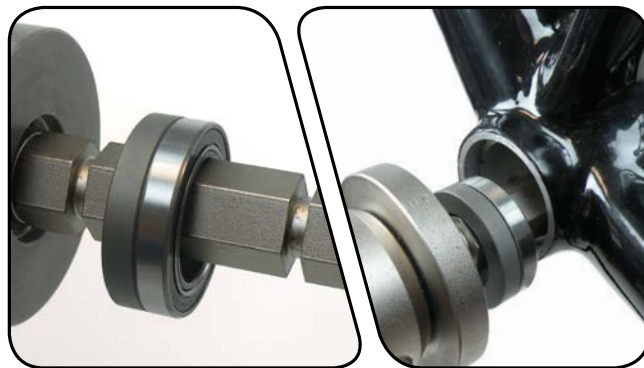
- 3 Apply grease to the inside surfaces of the bottom bracket shell.



- 4 Verify that the bearing shields are removed from the bottom bracket. Install the frame guide part of the SRAM BB30 Bearing Installation Toolkit onto a headset press with the stepped side facing **away** from the headset press handle.



- 5** Install a BB30 bearing onto the bearing installation part, with the blue seal facing **toward** the headset press handle.



- 6** Press the bearing into bottom bracket shell until it is flush against the retaining clip. Repeat the process for the other bearing. Consult your headset press manufacturer's instructions for proper use of the headset press.

NOTICE

Attempting to install both bearings simultaneously can damage the bearings and/or frame.



- 7** Apply a small amount of grease to outer bearing surfaces.



BB30 Crankset Installation

- 1 Apply grease to the inside surfaces of the bottom bracket shell, spindle threads, splines, and races (the smooth parts of the spindle near the Integrated Preload Adjuster and the splines).



- 2 Turn the Integrated Preload Adjuster (located on the spindle of the non-drive side crank arm) in the direction of the arrow until it contacts the crank arm. You may need to first loosen the 2 mm adjuster bolt located on the preload adjuster.



- 3 Install the non-drive side bearing shield onto the bottom bracket.



- 4** Slide the non-drive side crank arm spindle through the non-drive side bottom bracket cup until the splines come through the drive side bottom bracket cup, and the spindle stops. You may need to tap the crankset with a rubber mallet to fully install into the bottom bracket.

For 68 mm bottom bracket shells: install the 2.5 mm spacer onto the crank spindle before installing the crank into the bottom bracket.



5 For 68 mm bottom bracket shells: Install the drive side bearing shield, the large spacer, and then the 2.5 mm spacer onto the crank spindle.

For 73 mm bottom bracket shells: install the drive side bearing shield and large spacer onto the crank spindle.



6 Place the drive side crank arm on the spindle and use a torque wrench with a 10 mm hex bit socket to tighten the crank bolt to 48-54 N·m (425-478 in-lb).



- 7** Gently tap the drive side crank arm self extractor bolt with a rubber mallet to seat the crank arm.



- 8** Turn the Integrated Preload Adjuster in the direction of the arrow until it is hand-tight against the non-drive side bottom bracket shield.



- 9** Use a 2 mm hex wrench to tighten the preload adjuster bolt until the gap in the adjuster closes.
- Check the assembly for play by rocking the crank arms back and forth away from frame. If the crank moves, loosen the 2 mm preload adjuster bolt, turn the adjuster 1/2 turn to apply more preload to the crank, and re-tighten the preload adjuster bolt until the gap in the adjuster closes. Repeat this process until no play is detected.



Pedal Installation

- 1 Grease the pedal threads and install pedals to the crank arms. Torque the pedals to 48-54 N·m (425-478 in-lb). Use pedal washers if the pedal contact surface is not flat and smooth.

The drive side pedal is right hand thread. The non-drive side pedal is left hand thread.



XX1 Rear Derailleur Service

Maintenance

Wipe dirt and debris from between the cage plates and parallelogram linkage. Clean the derailleur with clean, soapy water. Rinse the derailleur with clean water and let air dry. Do **not** use a pressure washer.

Parts and Tools

- Safety glasses
- Nitrile gloves
- Clean, lint-free rag
- Isopropyl alcohol
- High quality bicycle grease
- Pick
- Vise
- 3 mm hex wrench
- T25 TORX® wrench
- Torque wrench
- 3 mm hex bit socket
- T25 TORX bit socket
- Small flathead screwdriver

Rear Derailleur Removal

- 1** Remove the chain from the rear derailleur (not pictured).
Make sure the Cage Lock feature is not engaged.

- 2** Use a T25 TORX® wrench to loosen the cable anchor bolt and remove the cable. Remove the cable housing from the rear derailleur.



- 3** Cut the cable off 15 cm (6 in) from the shifter barrel adjuster. Discard the old cable and cable housing (not pictured).

- 4** Use a T25 TORX wrench to remove the rear derailleur from the frame.



B-Bolt Replacement

- 1 Use a pick to remove the retaining ring from the groove in the B-bolt.

⚠ CAUTION - EYE HAZARD

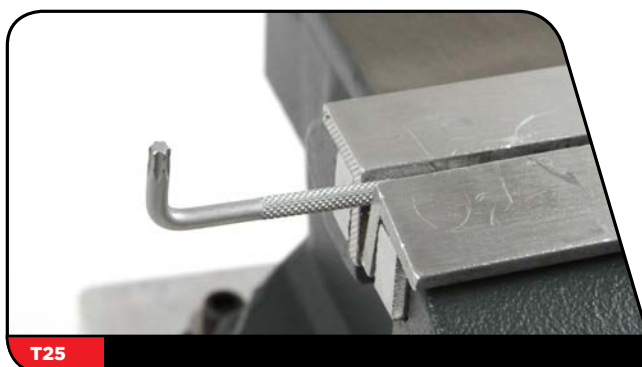
The retaining ring can rapidly eject during removal. Wear safety glasses.



- 2 Remove the B-adjust washer, wave spring, and B-bolt by hand.



- 3 Clamp a T25 TORX® wrench into a vise.



- 4** Apply grease to the threads and smooth contact surfaces of the B-bolt. Insert the new B-bolt, threads facing upward, onto the T25 TORX® wrench.



- 5** Position the derailleur through hole onto the B-bolt.



- 6** Install the new wave spring over the B-bolt threads, followed by the new B-adjust washer and then the new retaining ring.



- 7** Use your thumb and index finger to push down on the B-adjust washer to compress the wave spring and expose the retaining ring groove. Use a small flathead screwdriver to push the retaining ring into its groove.

Insert the flathead screwdriver between the two layers of the retaining ring. Then, push the end of the bottom layer of the retaining ring into the groove, followed by the upper layer.

⚠ CAUTION - EYE HAZARD

The retaining ring can rapidly eject. Wear safety glasses.

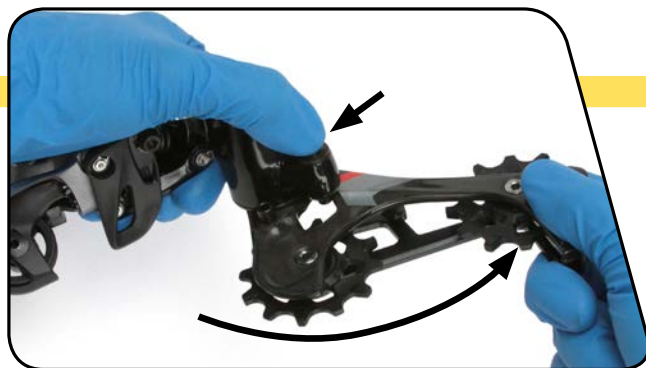


Pulley Replacement

- 1 Rotate the derailleur cage by hand and press the Cage Lock button to engage the pin into the cutout of the cage.

⚠ CAUTION - PINCH HAZARD

Keep fingers clear of pinch points. The derailleur is spring loaded and will return from the Cage Lock position rapidly.



- 2 Use a 3 mm hex wrench to remove the upper and lower pulley bolts.



- 3 Remove the inner cage plate and pulleys from the derailleur.



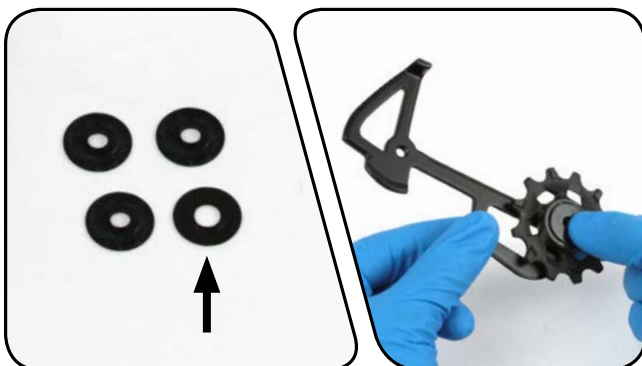
- 4** Remove the two bearing shields from the pulleys. Wipe the bearings and pulleys with a clean rag. Apply a small amount of grease to the blue inner seal on both sides of each pulley.
The bearing shields may have come off the pulley with the inner or outer cage plates.



- 5** Inspect the parts for damage. Replace worn or damaged pulleys. Replace the inner cage plate if it is damaged.



- 6** One bearing shield has a larger center hole. Place the bearing shield with the larger hole between the stepped bolt hole of the inner cage plate and the inboard side of the upper pulley.

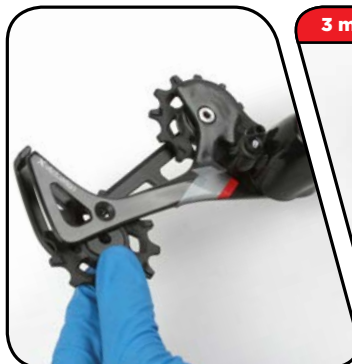


- 7** Use a 3 mm hex wrench to install the shorter cage bolt into the outer cage plate and upper pulley. Tighten the bolt just enough to hold the assembly together.



- 8** Install the bearing shields onto each side of the lower pulley. Insert the lower pulley between the inner and outer cage plates. Install the longer cage bolt into the outer cage plate and into the lower pulley. Use a 3 mm hex wrench to tighten both cage bolts to 2.5-3.5 N·m (22-31 in-lb).

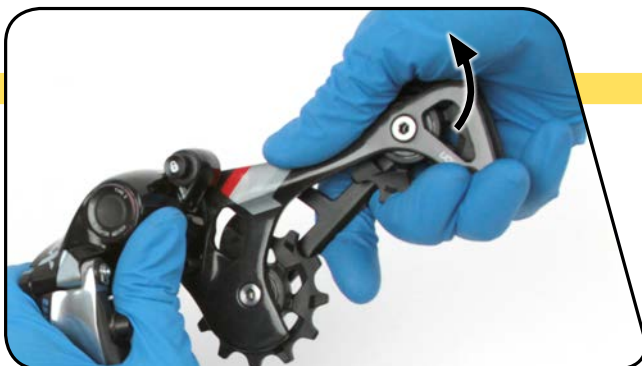
Pulleys are marked "L" for lower and "U" for upper. Orient the pulleys so the letters will be visible from the drive side of the bike once the derailleur is installed.



- 9** Rotate the cage out to disengage the Cage Lock pin. Then, carefully rotate the cage back to release it.

⚠ CAUTION - PINCH HAZARD

Keep fingers clear of pinch points. The derailleur is spring loaded and will return from the Cage Lock position rapidly.



Cable Pulley Replacement

- 1** Use a 3 mm hex wrench to remove the cable pulley bolt.



- 2** Remove the cable guide and cable pulley from the derailleur by hand and discard them.



- 3** Apply grease to the inside of the new cable pulley and install it into the new cable guide. Insert the new pulley bushing through the hole in the cable pulley and guide.



- 4** Install the cable pulley onto the derailleur and insert the new pulley bolt into the sleeve. Use a torque wrench with a 3 mm hex bit socket to tighten to 1.5 N·m (13 in-lb).



Rear Derailleur Installation

- 1** Apply grease to the threads of the derailleur hanger. Use a T25 TORX® wrench to install the rear derailleur onto the derailleur hanger.



- 2** Use a torque wrench with a T25 TORX bit socket to tighten to 8-10 N·m (70-88 in-lb).



- 3** Set up the rear derailleur according to the user manual instructions.

Rear Derailleur Troubleshooting

Problem	Cause	Remedy
Chain jumps from smallest cog to frame dropout	High gear limit screw is not adjusted properly	Turn in limit screw 'H' until the guide pulley is aligned with the outboard edge of the smallest cog
Difficult or impossible to shift chain onto smallest cog	High gear limit screw is not adjusted properly	Unscrew limit screw 'H' until the guide pulley is aligned with the outboard edge of the smallest cog
Chain jumps over largest cog and falls between the spokes and largest cog, or inner cage plate contacts spokes	Low gear limit screw is not adjusted properly	Turn in limit screw 'L' until the center of the guide pulley is aligned with the center of the largest cog
	Rear derailleur or derailleur hanger is bent	Straighten or replace
Delayed Shifting	Clearance between guide pulley/sprocket is too large	Adjust b-adjust screw by turning it counter-clockwise
Rough shifting behavior	Clearance between guide pulley/sprocket is too small	Adjust b-adjust screw by turning it clockwise
Shifts more gears onto smaller sprockets than intended	Shift cable insufficiently tensioned	Turn barrel adjuster on the shifter counter-clockwise
Delayed shifting onto larger sprocket	Shift cable insufficiently tensioned	Turn barrel adjuster on the shifter counter-clockwise
Delayed shifting onto smaller sprocket	Shift cable is too tight	Turn barrel adjuster on the shifter clockwise
	Excessive cable friction, pinched or poorly routed cable	Lubricate or replace cable and housing. Check for excessive bending of cable housing
Chain gap (clearance from largest cog to upper pulley wheel) is too large or too small	Chain is sized too small or too large	Size the chain according to the user manual
	Rear suspension chainstay growth	Check the chain gap clearance when the rear suspension is both fully extended and compressed 30%
Chain falls off of pulleys	Worn or damaged pulleys	Replace pulleys

Trigger Shifter Service

Maintenance

Use only water and a mild soap to clean the shifters. Do **not** use a pressure washer.

Parts and Tools

- Safety glasses
- Nitrile gloves
- Clean, lint-free rag
- Isopropyl alcohol
- High quality cable cutter
- Friction paste
- T25 TORX® wrench
- 3 mm hex wrench
- Torque wrench
- 3 mm hex bit socket
- T25 TORX bit socket
- Flathead screwdriver

Trigger Shifter Removal

- 1 Press the shift lever until it is in the highest gear position.



- 2 Use a T25 TORX® wrench to remove the cable from the derailleur.



- 3 Cut the cable off 6" (15 cm) from the shifter barrel adjuster. Discard the old cable and cable housing (not pictured).

- 4 Use a T25 TORX wrench to remove the shifter from the discrete clamp.



Cable Change

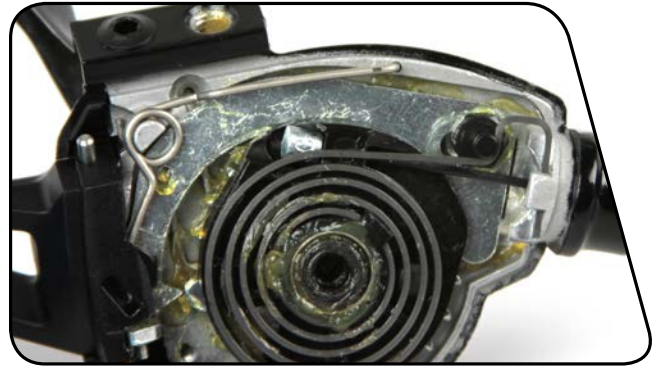
- 1** Use a 3 mm hex wrench to remove the shifter cover bolt. Remove the shifter cover by hand. Replace the shifter cover with a new one if it is damaged.



- 2** Push the cable from the barrel adjuster to remove the cable end from the shifter. Pull the cable head to remove the cable and discard it.



- 3** Feed the new cable through the cable entry and out of the barrel adjuster. Make sure the cable end is seated in the cable retainer slot.



- 4** Replace the shifter cover. Use a torque wrench with a 3 mm hex bit socket to tighten the shifter cover bolt to 0.15 N·m (1.3 in-lb).

Do not overtighten the shifter cover bolt.



Shift Lever Replacement

- 1** Press the shift lever until it is in the highest gear position. Take note of the position of the lever. You can use the numbered lines on the shifter to record your position.



- 2** Use a T25 TORX® wrench to remove the wedge bolt.



- 3** Use a flathead screwdriver to remove the lever and wedge plates from the shifter.

NOTICE

To protect your shifter from getting scratched, place a rag over the end of the screwdriver.



- 4** Remove and replace the lever o-ring.



- 5** Position the new wedge plates and o-ring as shown. Insert the bolt into the wedge plates and use a T25 TORX® wrench to start to thread the bolt into the lower wedge plate.

Having just one thread of the bolt started will help with installation into the lever.



- 6** Insert the wedge plates and bolt into the new lever.



- 7** Install the lever assembly onto the bearing in the desired position.

If the bolt is too threaded into the wedge plates too far, the lever will not install onto the shifter. Verify that the shifter is in the highest gear position.



- 8** Use a torque wrench with a T25 TORX® bit socket to tighten the bolt to 3.5 N·m (31 in-lb).

NOTICE

Do not overtighten the lever bolt. Overtightening the bolt can damage the lever.



Trigger Shifter Installation

- 1** Apply friction paste on the clamp contact surfaces (not pictured). Install the discrete clamp onto the handlebar. Use a torque wrench with a T25 TORX bit socket to tighten the discrete clamp bolt to 2.8-3.4 N·m (25-30 in-lb). Measure, cut, and install new shifter housing.



Grip Shifter Service

Maintenance

Use only water and a mild soap to clean the shifter. Do **not** use a pressure washer.

Parts and Tools

- Safety glasses
- Nitrile gloves
- Clean, lint-free rag
- Isopropyl alcohol
- Pick
- T25 TORX® wrench
- 2.5 and 3 mm hex wrenches
- Torque wrench
- 2.5 and 3 mm hex bit sockets
- High quality cable cutter

Grip Shifter Removal

- 1 Rotate the shifter in the cable release direction (the highest gear number).



- 2 Use a T25 TORX® wrench to remove the cable from the derailleur.



- 3 Cut the cable off at 15 cm (6 in) from the shifter barrel adjuster. Discard the old cable and cable housing (not pictured).

- 4 Use a 3 mm hex wrench to loosen the inner clamp bolt, and use a 2.5 mm hex wrench to loosen the bar end clamp bolt.



5 Remove the grip shifter from the handlebar.



6 Remove the grip from the grip shifter.



Cable Change

- 1** Remove the clamp from the shifter.



- 2** Remove the shifter cover.
The barrel adjuster may need to be turned counter-clockwise to provide clearance to remove the cover.



- 3** Use a pick to remove the lock ring from inside of the grip.



- 4** Push the cable out of the shifter and discard it.



- 5** Turn the barrel adjuster counter-clockwise to remove it from the shifter.

Removing the barrel adjuster will assist with cable installation.



- 6** Install the new cable into the cable port and out of the barrel adjuster. Make sure the cable head is seated in the cable port.



- 7** Slide the barrel adjuster onto the cable. Turn the barrel adjuster clockwise to install it onto the shifter.



- 8** Install the cable into the new cable housing and the frame stops. Attach the cable to the rear derailleur according to the user manual instructions.

Grip Replacement

- 1 Remove the clamp from the shifter.



- 2 Use a pick to remove the lock ring from inside of the grip.



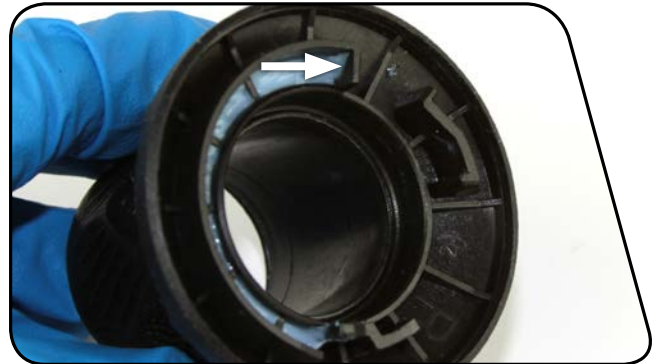
- 3 While rotating the grip lightly forward (release direction), pull the grip outward away from the shifter body.

⚠ CAUTION - EYE HAZARD

Pulling the grip quickly may cause the worm spring to eject from the shifter. Wear safety glasses.



- 4** Locate the spring tab on each side of the shifter where the worm spring will be installed.



- 5** Insert the worm spring onto the spring tab on the shifter body. Holding the spring in place, install the worm spring against the other spring tab.



- 6** Push the grip straight toward the shifter body to install it.
Do not rotate the grip during this step or you will dislodge the worm spring.



- 7** Reinstall the lock ring into the grip.



8 Reinstall the clamp onto the shifter.



Grip Shifter Installation

- 1** Install the grip onto the grip shifter.



- 2** Install the grip shifter onto the handlebar.



- 3** Use a torque wrench with a 2.5 mm hex bit socket to tighten the bar end clamp bolt to 2.0 N·m (18 in-lb). Push the inner clamp toward the shifter, then use a torque wrench with a 3 mm hex bit socket to tighten it to 2.8-4 N·m (25-30 in-lb).

Verify that the shifter cover is installed properly before tightening the inner clamp bolt.



- 4** Attach the cable to the rear derailleur according to the user manual instructions.

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